

Trustee Council Use Only  
Project No: 040455  
Date Received: 06/05/03

GEM PROPOSAL SUMMARY PAGE

Project Title: Gulf Ecosystem Monitoring and Research Program Data System

Project Period: FY 04-FY 05

Proposer(s): EVOS Trustee Council Office, Exxon Valdez Oil Spill Trustee Council

Study Location: ALL

**Abstract:** This project will provide continuing funding for ongoing development of the data management and information transfer system for the Gulf of Alaska Ecosystem Monitoring and Research (GEM) program. GEM is designed to monitor the ecosystems of the northern Gulf of Alaska and adjacent coastal regions for a very long time period (more than 100 years). Data collection, quality control and documentation, archiving, transfer, delivery, and presentation are critical components of GEM. Project funding will allow the GEM Data Systems Manager to provide the leadership and expertise necessary for this essential part of the GEM program, and hire support staff to make initial aspects of the program operational.

Funding:	EVOS Funding Requested:	FY 04	\$ 156,800	
		FY 05	\$	
		FY 06	\$	TOTAL: 156,800
	Non-EVOS Funds to be Used:	FY 04	\$	
		FY 05	\$	
		FY 06	\$	TOTAL:

Date: 06/05/03 Date proposal prepared

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## Gulf Ecosystem Monitoring and Research Program Data System

Project Number: 040455

Restoration Category: Data Management & Information Transfer

Proposer: EVOS Trustee Council Office, *Exxon Valdez* Oil Spill Trustee Council

Lead Trustee Agency: EVOS Trustee Council Office (ADFG)

Cooperating Agencies: None

Alaska SeaLife Center: No

Duration: 3rd year, on going project

Cost FY 03: \$212,900

Cost FY 04: \$156,800

Geographic Area: All

Injured Resource/Service: All

### ABSTRACT

This project will provide continuing funding for ongoing development of the data management and information transfer system for the Gulf of Alaska Ecosystem Monitoring and Research (GEM) program. GEM is designed to monitor the ecosystems of the northern Gulf of Alaska and adjacent coastal regions for a very long time period (more than 100 years). Data collection, quality control and documentation, archiving, transfer, delivery, and presentation are critical components of GEM. Project funding will allow the GEM Data Systems Manager to provide the leadership and expertise necessary for this essential part of the GEM program, and hire support staff to make initial aspects of the program operational.

## INTRODUCTION

The GEM program encompasses a long term effort to monitor ecosystem dynamics in the Gulf of Alaska. In order to extract scientific understanding from these monitoring efforts, the information collected over the years must be readily accessible for analysis and synthesis. GEM data management is charged with creating the technological structure to archive and disseminate this information. The following excerpt, taken from the National Research Council's review of the GEM Program Document, stresses the importance of concrete data and information management as it pertains to the GEM program:

*The legacy of the GEM program will be the data it collects. Given the objective of establishing a long-term measurement program in the Gulf of Alaska and its importance to both regional and national interests, GEM must make a strong commitment to data and information management. The goals must be to facilitate data exchange among GEM scientific investigators, make data available to the public and others outside the scientific community, and archive GEM data products.*

The success of the GEM program relies heavily on the efforts of the GEM data management section. Efforts which both contribute to the construction of a robust data archiving system and guide principal investigators to produce adequate data management plans will ensure that information harvested through the GEM program will be readily available to anyone for future scientific analysis and synthesis. Internally, the GEM data management section will provide a productive technological environment for all EVOS staff through the maintenance and support of network and computing systems located within the Trustee Council Office. In this regard a high priority for the GEM data management section is the production of an automated administrative system to expedite the processes associated with the registration, documentation, and review of GEM projects.

The GEM data policies, as detailed in the GEM Program Document, incorporate ten broad elements:

1. A commitment to the maintenance and long-term availability of data.
2. Full and open sharing of data at low cost, after verification and validation.
3. Timely availability of data, depending on the type of data. Some data will be available almost immediately; other data may be available with 24 months.
4. Availability of data on the GEM public web site.
5. Identification of the origin of all data with a citation.
6. Adherence to data collection and storage standards.
7. Provision of citations to the GEM bibliography.
8. Encouragement of active participation in the GEM web site for all participants.
9. Long-term archiving of all data in a designated storage facility.

10. Acceptance of and adherence to the data policies as a condition for participation in the GEM program and receipt of funding.

## **Need for the Project**

### **A. Statement of Problem**

The Trustee Council established goals for the GEM program (Gem Program Document, 2002)) that make data management a top priority. The “Inform” goal states that the GEM program will provide integrated and synthesized information to the public, resource managers, industry and policy makers in order for them to respond to changes in natural resources. The “Solve” goal requires developing tools, technologies, and information that can help resource managers and regulators improve management of marine resources and address problems that may arise from human activities. The “Detect” goal also has a data management and communication aspect, as GEM is asked to serve as a sentinel (early warning) system by detecting annual and long-term changes in the marine ecosystem, from coastal watersheds to the central Gulf of Alaska.

During the development stages of any data system, issues are identified and need to be resolved. This requires the guidance and direction of a professional data systems manager to develop and implement a successful network and database system. Timely implementation of a networking infrastructure, database system and associated web sites requires additional technical assistance.

### **B. Rationale/Link to Restoration**

In order to accomplish the Trustee Council’s goals for the GEM program, management of monitoring and research data is a top priority. The purpose of this project is to provide funding to the GEM program Data Systems Manager and Analyst/Programmer in the development and implementation of a data system for GEM.

### **C. Location**

The Data Systems Manager and Analyst/Programmer will work in the *Exxon Valdez* Oil Spill Trustee Council Office in Anchorage. The Data Systems Manager will generally work under the supervision of the Science Director, although for some projects, will work under the supervision of the Executive Director. The Analyst/Programmer will work for the Data Systems Manager.

## **Project Design**

### **A. Objectives**

The Data Systems Manager will work under the general direction and supervision of the Trustee Council's Science Director to:

- Design, implement and manage a data and information system consistent with the provisions of the GEM Program Document that provides data, information products (maps, tables, summary reports) and documentation for scientific researchers, resource managers, policy makers, and the public.
- Determine how best to incorporate existing and future data sets identified by the Science Director and other scientists into the data and information system.
- Develop data management plans and work with Principal Investigators for all data gathering projects funded by the GEM program.
- Chair a Data Advisory Committee; serve as liaison to federal/state agencies, other research entities, principal investigators, other technical support personnel, as well as stakeholders and the general public.

Specific duties will include

1. Continue to develop a data policy that specifies how, when, and in what format data collected under the GEM program will be provided to GEM.
2. Implement and apply data archiving policies and procedures to potential datasets.
3. Develop procedures for determining how, where, and for how long different kinds of data and metadata should be stored.
4. Ensure that GEM data standards are consistent with federal, state, and industry standards and make required changes to GEM data standards if needed.
5. Develop procedures and strategies for processing and using both existing and various types of new data (e.g., time series, taxonomic surveys, geographic locations of seabird colonies).
6. Develop/Implement procedures for QA/QC, including validation of GEM data sets.
7. Develop and maintain a data system which interfaces with other regional data systems.
8. Design, build, and maintain solutions to manage complex scientific data, using existing software products (for both database systems and data analysis).
9. Account for integration, performance, and reliability of databases.

The Analyst/Programmer will work under the general direction and supervision of the Data Systems Manager to:

- Provide for computer and network needs of office staff, including Web site.
- Implement a data and information system consistent with the provisions of the GEM Program Document that provides data, information products (maps, tables, summary reports) and documentation for scientific researchers, resource managers, policy makers, and the public.
- Incorporate existing and future data into the data and information system.

Specific duties will include:

1. Implement QA/QC procedures on incoming data and validate metadata for the GEM data system.
2. Assist in enhancements to the Council's web sites that allow access to GEM data and information.
3. Implement solutions to manage complex scientific data, using existing software products (for both database systems and data analysis).
4. Provide network and computer support for the GEM program and the overall Trustee Council Office.

## **B. Methods**

N/A

## **C. Cooperating Agencies, Contracts, and Other Agency Assistance**

Technical data personnel from Trustee agencies and other research entities have been invited to serve on a data advisory subcommittee. The subcommittee will assist in setting goals and policies for the GEM data system. The data subcommittee will also assist in the development of the data system and advise on how best to address the target user communities' needs and the scope of the system.

## **SCHEDULE**

### **A. Measurable Project Tasks for FY 04 (October 1, 2003 – September 30, 2004)**

The primary objective of this project is to provide an ongoing service, consequently there are few set milestone dates or endpoints.

October 15:	LINUX Server installed and testing and implementation of data system begins.
December:	Installation of OPeNDAP DODS server and connection to IOOS
October-January:	Data Systems Manager prepares data management plans for FY 04 projects approved by Trustee Council
January:	Attend EVOS Trustee Council/GEM annual workshop
November-September:	Existing data sets identified, collected, documented and incorporated into GEM data system in an ongoing fashion

## **B. Completion Date**

The data system will be an ongoing component of the GEM program.

### **PRINCIPAL INVESTIGATOR**

Rob Bochenek  
Data Systems Manager  
*Exxon Valdez* Oil Spill Trustee Council  
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Anchorage, AK 99501  
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(907) 276-7178 (fax)  
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### **PRINCIPAL INVESTIGATOR**

Mr. Bochenek has degrees in mathematics, physics, and aerospace engineering and has worked in scientific programming most of his professional life. He has been Data Systems Manager of the Trustee Council since April 2003, and prior to that, Analyst/Programmer since October of 2002.

## **Project 040455 – BUDGET JUSTIFICATION**

### **ADF&G/Trustee Council Office Component**

#### **Personnel (\$97.2)**

The GEM data systems budget includes 2 full time positions one of which is jointly funded with NOS. Data Systems Manager, Rob Bochenek (12 months salary Range 21 B, \$80.4). Analyst Programmer (3 months salary at Range 18 Step A, \$16.8) (NOS grant provides 9 months of salary, \$50.4) - Position currently vacant. Intend to hire. Budgeted amount assumes full-time position is filled by Oct. 1, 2003 at a Range 18 Step A.

#### **Travel (\$19.2)**

TC Office data management staff (\$6.2) – Based on FY 03 actual expenses, which included travel to Fairbanks, Juneau, and various data management conferences/meetings.

Data Subcommittee meeting travel (\$13) – Includes out of town travel expenses for Data Management Subcommittee members to attend GEM data management meetings.

#### **Contractual (\$8.0)**

Staff Training (\$8.0) – This is to cover the expense of Four to Five professional technology courses to assist the GEM Data Systems Manager and Analyst Programmer in performing their job responsibilities.

#### **Commodities (\$20.6)**

Software Upgrades and Licenses (\$10)

Tapes for Tape Backup (\$2.6)

Linux Development Server (8.0)

**FY 04 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET**

October 1, 2003 - September 30, 2004

<b>Budget Category:</b>	<b>Authorized FY 03</b>	<b>Proposed FY 04</b>						<b>Authorized FY 02</b>
Personnel	\$151.2	\$97.2						\$47.5
Travel	\$7.9	\$19.2						\$16.1
Contractual	\$3.0	\$8.0						\$20.0
Commodities	\$10.0	\$20.6						\$2.4
Equipment	\$23.2	\$0.0	LONG RANGE FUNDING REQUIREMENTS					\$10.5
Subtotal	\$195.3	\$145.0	Estimated					\$96.5
General Administration	\$17.6	\$11.8	FY 05					\$8.5
Project Total	\$212.9	\$156.8	TBD					\$105.0
Full-time Equivalents (FTE)		1.3						
Dollar amounts are shown in thousands of dollars.								
Other Resources								
<p>Comments:</p> <p>The Data Analyst Programmer III position is a fulltime position, 3 months salary is to be paid out of the Data Management budget and 9 months are to be supplemented by the NOS grant and paid out of the Science Mangement budget (Project 040630).</p>								

**FY04**

Prepared: 07/21/03

Project Number: 040455  
 Project Title: GEM Data System  
 Agency: Restoration Office (ADF&G)

FORM 3A  
 TRUSTEE  
 AGENCY  
 SUMMARY



**FY 04 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET**

October 1, 2003 - September 30, 2004

<b>Contractual Costs:</b>		Proposed
Description		FY 03
Staff training		8.0
When a non-trustee organization is used, the form 4A is required.		<b>Contractual Total</b> \$8.0
<b>Commodities Costs:</b>		Proposed
Description		FY 03
Software upgrades and licenses		10.0
Tapes for Tape Backup		2.6
Linux Development Server		8.0
<b>Commodities Total</b>		\$20.6

**FY04**

Prepared: 07/21/03

Project Number: 040455  
 Project Title: GEM Data System  
 Agency: Restoration Office (ADF&G)

FORM 3B  
 Contractual &  
 Commodities  
 DETAIL

